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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,525	10/19/2001	Eric K. Larson	04513-023001	7279
26161	7590	10/27/2003		
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110				
			EXAMINER FRANK, RODNEY T	
			ART UNIT 2856	PAPER NUMBER

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant No.

10/042,525

Applicant(s)

LARSON ET AL.

Examiner

Rodney T. Frank

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 and 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 and 22-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 1-11 and 17-21 were withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected marine engine and method for sensing oil flow, there being no allowable generic or linking claim. Election was made without traverse in Paper No. 7. These claims would need to be canceled in the event this case was to be considered to be in condition for allowance.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12, 16, 22, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staerzl (U.S. Patent Number 5,804,712). Staerzl discloses an oil flow sensor and circuit to indicate the presence of oil flow in a multi-cylinder internal combustion engine. The oil sensor includes a heating element positioned within the oil line directly in the oil flow path. Positioned upstream and downstream from the heating element are an upstream heat sensor and a downstream heat sensor. Each of the heat sensors is a negative temperature coefficient resistive device, such that the resistance of the heat sensor varies depending upon oil temperature at the sensor. The output of both the upstream and downstream sensor is coupled to a comparator. The comparator compares the value of the signals from the heat sensors and triggers a switching circuit

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when the temperature at the sensors approach one another, thus detecting that there is not adequate oil flow to the engine. The switching circuit is connected to a signaling device that indicates whether oil flow to the engine is adequate (see the abstract).

In reference to claim 12, figure 1 of Staerzl discloses a coupling (21) having two open ends adapted for connection to upstream and downstream tubes of a pulsating oil circulation system of an engine and a channel configured to direct oil to flow past a temperature sensor (18 and 20) connected to a sensing circuit, the sensing circuit comprising elements connected to determine a change in a voltage across the temperature sensor at to compare the change to a threshold, and to generate a flow-state signal based upon this comparison. Details on the operation of the device can be found in column 3 lines 12-36.

In reference to claim 16, ports to carry flow-state signals and timing signals are provided.

In reference to claim 22, though there is no diode specifically disclosed, the diode is a part of the applicant's comparator circuit. The examiner feels that this is a circuit design choice and therefore, the use of a diode in a comparator would also be obvious to one of ordinary skill in the art.

In reference to claims 23 and 24, the size of the housing is a design choice that would be well within the preview of one of ordinary skill in the art.

4. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staerzl as applied to claims 12, 16, 22, 23, and 24 above, and further in view of Mitra et al. (U.S. Patent Number 5,422,807; hereinafter referred to as Mitra). Mitra discloses a semiconductor microcontroller includes the capability to perform analog to digital conversions of an analog signal representative of a variable parameter indicative of the need to exercise a control function. While the analog to digital conversions are being performed, the microcontroller processor can be

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powered down to eliminate noise arising from switching activities of the processor as a source of inaccuracy in the conversion process. At the end of the conversion, the analog to digital converter can either shut itself down or wake up the processor. The powering down is achieved by simply disabling the clock input to the microcontroller so that the processor is still activated but incapable of undergoing switching functions (see the abstract). The motivation to combine the Mitra reference with the teachings of the Staerzl is to have a detail for the operation of a microcontroller to control the oil flow sensor disclosed in Staerzl.

In regard to claim 13, Mitra discloses a microcontroller that can be used in automotive applications, such as an engine control module (see column 1 lines 51-64) which utilizes a sample and hold circuit to store a referenced voltage value (see column 2 lines 40-42).

In regard to claim 15, a microcontroller with an analog-to-digital conversion is disclosed as the principal aspect of the Mitra invention.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staerzl as applied to claims 12, 16, 22, 23, and 24 above, and further in view of Iida (U.S. Patent Number 4,483,295). Iida discloses a control device for a multicylinder engine comprising a knocking detector for detecting the occurrence of knocking, a crank angle sensor for generating a signal indicative of the crank angle, an engine operating condition control device for governing the engine operating condition, and a control circuit for identifying one of the engine cylinders in which knocking has actually occurred, in dependence on both outputs from the detector and the crank angle sensor. The control circuit operates to cause the engine operating condition control device to control the at least one of the engine cylinders when the output from the detector is lower than a predetermined value, but to control all of the engine cylinders when it is higher than the predetermined value (see abstract). The motivation to combine the Iida reference with the

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teachings of the Staerzl is to have a detail for the operation of a control device to control the oil flow sensor disclosed in Staerzl.

In regard to claim 14, Iida discloses the use of delay circuit in order to provide a synchronization of time for a signal provided to the control circuit (see column 7 lines 47-53).

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staerzl as applied to claims 12, 16, 22, 23, and 24 above, in view of Mitra as applied to claims 13 and 15 above, and further in view of Iida as applied to claim 14 above. The motivations to combine these references are discussed more at length above. However, the claim 25 as presented, includes various limitations that were already discussed in detail above and combining them into one claim, since the limitations are already discussed at length above, would also be obvious in view of the three references combined.

#### *Response to Arguments*

7. Applicant's arguments filed 12 August 2003 have been fully considered but they are not persuasive. The applicant argues that the Staerzl reference does not disclose a change in voltage nor a comparison of this change to a threshold. The examiner strongly disagrees. The Staerzl reference describes the operation of the device as follows:

In operation, the oil flow sensor 14 works as follows. The heating element 16 and each of the heat sensors 18 and 20 are positioned within the oil line 12. Once positioned as such, supply voltage 22 is applied to the heating element 16 such that the heating element 16 transmits heat into the oil flow 10. If oil is flowing throughout the oil line 12, the temperature at the downstream heat sensor 20 will be greater than the temperature at the upstream heat sensor 18, since heat is convected downstream from heating element 16 by the oil flow 10. With an adequate amount of oil flow, the resistance of the downstream heat sensor 20 should be less than the resistance of the upstream heat sensor 18 (unless the sensors 18 and 20 are not properly

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matched). If, however, the flow of oil 10 through the oil line 12 has stopped, or is otherwise inadequate, the resistance of the upstream heat sensor 18 will be approximately equal to the resistance of the downstream sensor 20, because heat from the heat element 16 will transfer through the stagnant oil in the oil line 12 at essentially the same rate in both the upstream and downstream directions. Therefore, by comparing the resistance of the upstream sensor 18 to downstream sensors 20 (i.e. comparing the temperature at the upstream heat sensor 18 to the temperature at the downstream heat sensor 20), the oil sensor 14 determines whether an adequate amount of oil is flowing through the oil line 12 (Please see column 3 lines 12-36).

With this in mind, the device checks the resistance at each thermistor. There is a well-established relationship between resistance and voltage within the electronic art so to say that the device does not check for a change in voltage would be incorrect. Also, it specifically states that as the resistance values of the two thermistors approach each other, then the circuit determines inadequate oil flow. If there is no determination in a "change" in the sensor reading, then how can the circuit ever determine if the readings approach each other? The point where the upstream and downstream sensor are almost equal would represent a "threshold". This threshold is what the Staerzl reference checks against in order to determine adequate oil flow. Therefore, it is the opinion of the examiner that for at least these reasons, the previous rejection given was valid and this same rejection is thus maintained here.

### *Conclusion*

8. This is a RCE of applicant's earlier Application. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See

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MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (703) 306-5717. The examiner can normally be reached on M-F 9am -5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (703) 305-4705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

RTF  
October 23, 2003

  
HEZRON WILLIAMS  
SUPERVISOR, PATENT EXAMINER  
OCTOBER 23, 2003